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PATENT  
Attorney Docket No.: 016301-021300US  
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TOWNSEND and TOWNSEND and CREW LLP

By: Matthew T. Sarles /  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:  
Karl A. Littau et al.

Application No.: 08/893,917

Filed: July 11, 1997

For: REMOTE PLASMA CLEANING SOURCE  
HAVING REDUCED REACTIVITY WITH  
A SUBSTRATE PROCESSING CHAMBER

Customer No.: 57385

Confirmation No.: 8435

Examiner: Rudy Zervigon

Technology Center/Art Unit: 1792

**PRE-APPEAL BRIEF**  
**REQUEST FOR REVIEW**

**MAIL STOP: AF**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Applicant requests review of the rejections in the Final Office Action dated June 12, 2007 (the "Office Action"), as sustained by the Advisory Action dated August 25, 2008 (the "Advisory Action"), for the above-identified application. A response after-final has been filed in this application, but no amendments were made in that response, and consequently, none were entered by the Examiner. No amendments to the claims are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reasons stated herein.

**Remarks**

The Applicant respectfully requests review of the pending rejection of 22-24 and 27 because the Office Action. Specifically, Applicant requests withdrawal/reversal of the rejection of independent claim 22, and consequently of dependent claims 23, 24, 27 and 28.

Claim 22 is reproduced below:

22. A method of removing residue from a substrate processing chamber, said method comprising the steps of:

forming a plasma remotely with respect to said chamber, said plasma including a plurality of reactive radicals;

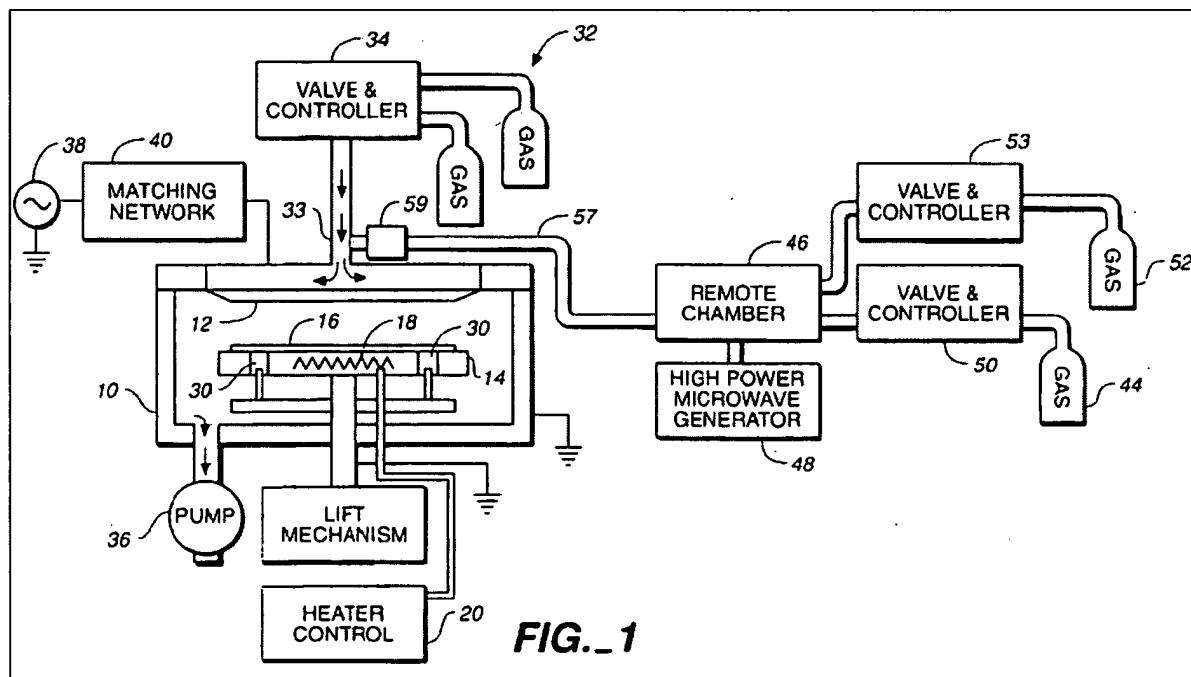
forming a flow of said reactive radicals traversing toward said chamber;

forming a nonplasma diluent gas flow, wherein said nonplasma diluent gas flow comprises at least one of an inert gas or a reduction gas;

mixing said flow of said reactive radicals and said diluent gas flow at a mixing location downstream of a location of forming said flow of said reactive radicals and anterior to said chamber to form a gas-radical mixture; and

flowing said gas-radical mixture into said chamber.

The Office Action cites figure 1 and other portions of Shang as teaching the above recitations. Figure 1 of Shang is reproduced below:



Gases 32 in figure 1 are only described in Shang as “gases used during deposition” (column 4, lines 21-22). Gas 44 in figure 1 is described as a “precursor gas” (column 4, line 41). Gas 52 in figure 1 is described as a “minor carrier gas” (column 4, lines 64-65). The minor carrier gas may be “argon, nitrogen, helium, hydrogen or oxygen.” (column 5, lines 4-5). Gases 44 and 52 are used to clean the process chamber of Shang, and gases 32 are used during deposition in Shang (see above and column 4, lines 31-36, “[t]he second gas supply system [gases 44 and 52] supplies gas that is used to clean the inside of the chamber after a sequence of deposition runs”).

Therefore, making an *in arguendo* correlation of claim 22 with figure 1 yields:

22. A method of removing residue from a substrate processing chamber 10, said method comprising the steps of:

forming a plasma remotely AT REMOTE CHAMBER 45 with respect to said chamber 10, said plasma including a plurality of reactive radicals;

forming a flow of said reactive radicals traversing toward said chamber AT PIPE 57;

forming a nonplasma diluent gas flow AT VALVE 34, wherein said nonplasma diluent gas flow comprises at least one of an inert gas or a reduction gas AT GASES 32;

mixing said flow of said reactive radicals FROM PIPE 57 and said diluent gas flow FROM VALVE 34 at a mixing location 33 downstream of a location of forming said flow of said reactive radicals 46 and anterior to said chamber 10 to form a gas-radical mixture; and

flowing said gas-radical mixture into said chamber 10.

However, the allegation of the Office Action and Advisory Action that gases 32 teaches “at least one of an inert gas or a reduction gas” is incorrect. As stated above, gases 32 are only described by SHANG as “gases used during deposition.” The Office Action and Advisory Action appear to allege that because gas 52, the “minor carrier gas,” could be “argon, nitrogen, helium, hydrogen or oxygen,” then gases 32 could also be such. This is never proposed by Shang, and instead may even be taught away from by Shang since gas 44 is used “to clean,” and gases 32 are used “during deposition.”

Consequently, Shang does not teach that gases 32 are inert or reduction gases as recited by claim 32. Essentially, the Office Action and Advisory Action has found one mention of such gases in Shang, and then presumed that one of skill in the art would use such gases wherever any gas might be mentioned in Shang. And such a presumption has been made in spite of Shang's differentiation and teaching of "cleaning" versus "deposition" gases, where argon, nitrogen, helium, hydrogen or oxygen are only described with reference to cleaning, not deposition.

Therefore, Shang does not teach at least this recitation of claim 22, and thus cannot anticipate claim 22. Claims 23, 24, 27 and 28 each depend from claim 22 and are therefore believed to be allowable at least by virtue of their dependence from an allowable base claim.

**Conclusion**

For at least all of the foregoing reasons, the Applicant respectfully requests withdrawal of rejections discussed and issuance of a formal Notice of Allowance.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Date: December 12, 2008

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Respectfully submitted,

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